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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/625,160 | 07/23/2003 | Yong-Chan Keh | 5000-1-397 | 7995 |
| 33942 | 7590 | 03/22/2005 | EXAMINER | |
| CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652 | | | ROJAS, OMAR R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2874 | |

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. ~~6~~

10/625,160

Applicant(s)

KEH ET AL.

Examiner

Omar Rojas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 6 and 9-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on July 23, 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the photodiode bonded to the silicon optical bench must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 1 is objected to because of the following informalities: Claim 1 recites “*a laser diode disposed in the V-groove.*” This limitation is considered somewhat vague and indefinite because the use of the adverb “in” implies that the laser diode is disposed “within” or “inside” the V-groove. However, the drawings and specification reveal that the laser diode (10) is disposed “on” or “over” the V-groove (101), e.g., as seen in Figure 4. For the purposes of this examination, it is assumed that the use of the word “in” by the claim, means “on” or “over.”

Appropriate correction is required.

4. Claim 8 is objected to because of the following informalities: Claim 8 recites the limitation “*the glass powder*” while base claim 7 recites “*glass seal powders.*” It is not clear or definite which glass powder is referred to by claim 8 in view of base claim 7. Appropriate correction is required.

5. Claim 9 is objected to because of the following informalities: Claim 9 is objected to for reciting “*the first lead*”, “*the second and the third lead*”, and “*the fourth and the fifth lead*” without providing a clear antecedent basis for these limitations in the base claim. Appropriate correction is required.

6. Claim 12 is objected to because of the following informalities: Claim 12 recites “*a laser diode disposed in the V-groove.*” This limitation is considered somewhat vague and indefinite because the use of the adverb “in” implies that the laser diode is disposed “within” or “inside” the V-groove. However, the drawings and specification show that the laser diode (10) is disposed “on” or “over” the V-groove (101), e.g., as seen in Figure 4. For the purposes of this

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examination, it is assumed that the use of the word "in" by the claim, means "on" or "over."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 5, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patent No. 4,686,678 to Ohta et al. ("Ohta") in view of JP 3-217065 to Toshiba ("Toshiba") and further in view of Patent No. 6,733,190 to Kuhara et al. ("Kuhara").

Regarding claim 1, Ohta discloses an optical module comprising:

a stem (1 and/or 13);

a silicon optical bench (101) disposed on the stem,

a laser diode (2) disposed in/on the silicon bench (101);

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a photo diode (102) disposed in/on the stem, the photo diode (102) converts light received from the laser diode into current (col. 4, lines 25-30);

and a plurality of leads (15-17) coupled to the stem. See Figure 1 of Ohta reproduced below.

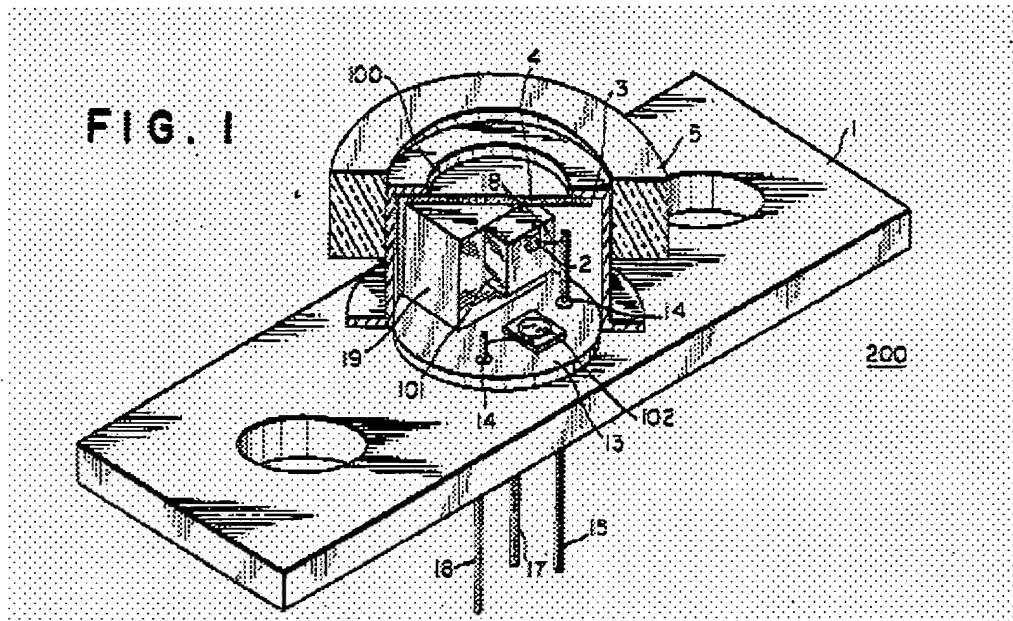
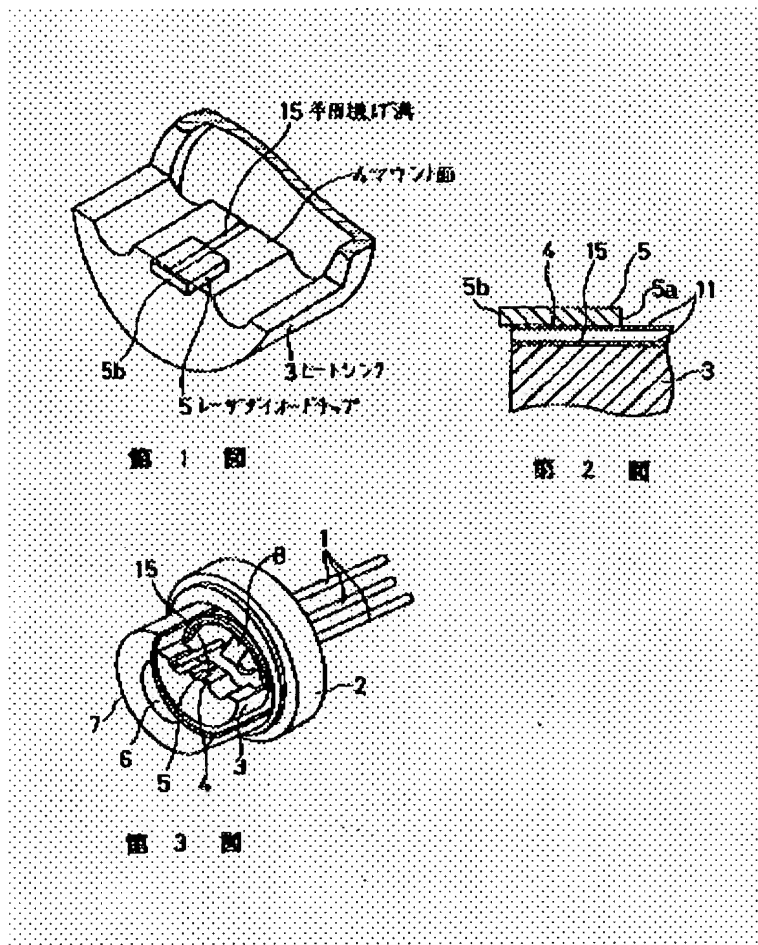


Figure 1 of Ohta.

Thus, Ohta only differs from claim 1 in that Ohta does not teach that his silicon optical bench (101) has a V-groove, with the laser diode (2) disposed in or on the V-groove.

Toshiba (see Figures 1-3 below) teaches providing a groove (15) in a heat sink (3) and disposing a laser diode (5) on the groove. The silicon bench of Ohta is also used as a heat sink (see Ohta at col. 4, ll. 17-18).



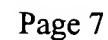
The configuration of disposing a laser diode on a groove is useful for providing a solder dam in the Toshiba reference. It is further noted that forming V-grooves in silicon benches was a well-known conventional technique at the time of the claimed invention. See Patent No. 6,733,190 to Kuhara et al. at column 19, lines 12-16.

Therefore, it would have been obvious to provide a groove in the silicon bench of Ohta and dispose the laser diode on the groove in view of Toshiba. It would also further been obvious to provide a V-groove in Ohta in view of Kuhara. The above modifications would have provided a

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Regarding claim 12, the previous remarks concerning claim 1 are incorporated herein. Thus, Ohta combined with Toshiba and Kuhara only differs from claim 12 in that ceramic feed-throughs are not disclosed by any of the aforementioned references.

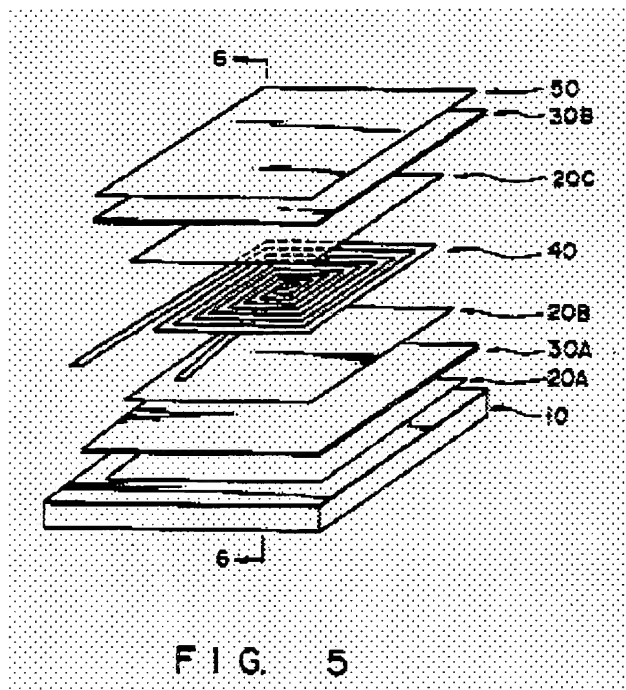
However, applicant(s) have not disclosed a perceived criticality for the use of ceramic feed-throughs. According to the applicant's specification, ceramic feed-throughs are merely a substitute for leads. Ohta, as discussed above, already discloses leads.

Therefore, because no perceived criticality is disclosed for the substitution of ceramic feed-throughs for leads, claim 12 is also considered unpatentable over Ohta when combined with Toshiba and Kuhara.

10. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta in view of Toshiba and Kuhara as applied to claim 1 above, and further in view of Patent No. 6,404,317 to Mizoguchi et al. ("Mizoguchi").

Regarding claims 2-3, the previous remarks concerning claim 1 are incorporated herein. Ohta in view of Toshiba and Kuhara differ from claims 2-3 in that a spiral type thin-film inductor choke is not disclosed as being disposed on the silicon optical bench and connected to the laser diode.

Mizoguchi, however, teaches disposing a spiral type thin film inductor choke coil (40) disposed on a silicon substrate (10). See Figure 5 of Mizoguchi reproduced below.



The inductor coil (40) of Mizoguchi is desirable to use as a DC-DC power converter and for miniaturization of electronic devices. See Mizoguchi at column 5, lines 47-52 and column 6, lines 23-27.

Therefore, it would have been obvious to one of ordinary skill in the art to obtain the invention of claims 2-3 by combining Mizoguchi's spiral thin-film inductor choke coil with Ohta in view of Toshiba and Kuhara.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta in view of Toshiba and Kuhara as applied to claim 1 above, and further in view of Patent No. 6,859,470 to Fu et al. ("Fu").

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Regarding claim 4, the previous remarks concerning claim 1 are incorporated herein. Ohta in view of Toshiba and Kuhara differ from claim 4 in that RF matching resistor is not disclosed as being disposed on the silicon optical bench and electrically connected to the laser diode.

Fu, however, teaches disposing an RF matching resistor (1124) on a silicon optical bench (1108) and electrically connecting it to a the laser diode (1102). See Fu at column 24, lines 14-28.

The ordinary skilled artisan would have desired to combine Fu's disclosure with Ohta in view of Toshiba and Kuhara in order to create a matched circuit with the laser. See Fu at column 23, lines 16-19.

Therefore, it would have been obvious to one of ordinary skill in the art to obtain the invention of claim 4 by combining Fu's RF matching resistor with Ohta in view of Toshiba and Kuhara.

12. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta in view of Toshiba and Kuhara as applied to claim 1 above, and further in view of Patent No. 3,959,765 to Stewart ("Stewart").

Regarding claims 7-8, the previous remarks concerning claim 1 are incorporated herein. Ohta in view of Toshiba and Kuhara differ from claims 7-8 in that a borosilicate glass seal powder is not disclosed as bonding the leads.

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Stewart, however, teaches using a borosilicate glass seal powder (98, 100) for bonding electrical leads (82, 94). See Stewart at column 8, lines 49-57.

The ordinary skilled artisan would have desired to combine Stewart's disclosure with Ohta in view of Toshiba and Kuhara in order to securely bond the electrical leads to the stem.

Therefore, it would have been obvious to one of ordinary skill in the art to obtain the invention of claims 7-8 by combining Stewart's glass seal powder with Ohta in view of Toshiba and Kuhara.

Allowable Subject Matter

13. Claims 6 and 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 6, by bonding the leads to the silicon optical bench, applicants disclose that inductances can be reduced. Therefore, this limitation is considered patentable over the prior art cited in this Office action. Regarding claims 9-11, fourth and fifth leads connected with an anode and cathode of the photodiode, respectively, are not disclosed by any of the cited prior art. These limitations are considered novel in view of prior art of record.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (7:00AM-3:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (703) 872-9306. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Omar Rojas
Patent Examiner
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or
March 21, 2005